REMARKS

I. Status of the Claims and the Rejections

Claims 11 and 13 were rejected under 35 U.S.C. 102(b) as being anticipated by Fischer et al U.S. Patent No. 5,479,983 ("Fischer '983"). Claims 1-6 and 14 were rejected under 35 U.S.C. 103(a) for obviousness over Fisher '983 in view of Nakanishi et al U.S. Patent No. 6,009,939 ("Nakanishi '939"), and Taylor et al U.S. Patent No. 1,921,172 ("Taylor '172"). Applicants respectfully traverse these rejections and request reconsideration in view of the foregoing amendments and the following remarks.

The Office Action also requested an explicit statement of which species new claims 13 and 14 read on, and Applicants affirm the initial response filed on June 10, 2009, stating that each of these claims is generic. Additionally, the non-elected claims have now been cancelled in this Response, but Applicants reserve the right to pursue these claims in a related application.

The Office Action included a rejection of claims 1-6, 11, 13, and 14 under 35 U.S.C. 112 for indefiniteness. Each of these claims has now been amended as Examiner suggested to provide proper antecedent basis for each element in the claims. Applicants respectfully request that this rejection now be withdrawn.

II. Claims 11 and 13 are Novel

A. The Claims

Claim 11 recites "a passenger aircraft, a cabin of which is sub-divided into a plurality of cabin zones supplied with specially temperature-regulated feed air, including an electronic control unit arranged to control, for each cabin zone, the temperature of the injected feed air dependent upon a deviation of an injection temperature actual value, measured by a sensor, in relation to an injection temperature target value for the respective

cabin zone." For a selected portion of the cabin zones, the electronic control unit establishes the injection target temperature value "by comparing an ambient temperature actual value for each of the selected portion of cabin zones, measured by a sensor, with an ambient temperature target value for the respective cabin zone." The electronic control unit also "establishes an injection temperature target value for a first cabin zone not within the selected portion of the cabin zones, upon the basis of an injection temperature target value of at least one second cabin zone different from the first cabin zone and of an injection temperature actual value (T_L) of the at least one second cabin zone."

Claim 13 recites "a device for controlling the temperature of feed air to be injected into a cabin zone of a passenger aircraft" including "a temperature sensor measuring the injection temperature of the feed air to be injected into the cabin zone; and an electronic control unit." The control unit controls the temperature of the feed air "dependent upon a deviation of a measured injection temperature actual value of the feed air to be injected into the cabin zone from an injection temperature target value," the injection temperature target value being established by the control unit "without using an ambient temperature actual value for the cabin zone."

Applicants respectfully assert that claims 11 and 13 were allowable over the cited prior art before this amendment. The Office Action stated that some of the elements of claims 11 and 13 were non-limiting intended uses of the device. Applicants respectfully assert that the amendments to claims 11 and 13 overcome these objections, and that these claims are novel.

B. The Deficiencies of the Cited Prior Art

Fischer '983 is directed to an air conditioning system for the passenger compartment of an aircraft. As shown in Fig. 1, Fischer '983 discloses a passenger aircraft (1) with a passenger cabin (1B) divided into three air conditioning zones (2, 3, 4), each

having a zone sensor (18-20) for sensing the ambient temperature within the zones (2-4). Additionally, the cabin (1B) is also divided into six air introduction sections (A1-A6) that are coupled to the conditioned air distribution system (17) via respective individual air distribution systems (5-10) and air ducts (11-16). The air introduction sections (A1-A6) can be configured in different ways to form air conditioning zones (2-4) of different sizes as needed. Each of the individual air distribution systems (5-10) includes a duct temperature sensor (35-40) and is connected to corresponding admixing air ducts (23-28) having mixing valves (29-34) which allow hot air into the air distribution systems (5-10) as needed. The mixing valves (29-34) and therefore the temperature of conditioned air delivered to the cabin (1B) is controlled by controller (41).

As shown in Figs. 3-4, the controller (41) receives an input desired temperature from temperature selectors (45-47) in the respective air conditioning zones (2-4). The controller (41) compares these values to the actual measured ambient temperatures in the zones (2-4) as measured by the zone sensors (18-20). Then the controller (41) modifies the amount of hot air that is being delivered through the relevant mixing valves (29-34) and associated air distribution systems (5-10) until the air traveling into the air conditioning zones (2-4) is of a proper temperature to reduce the difference between the desired and actual ambient temperatures. Thus, the controller (41) modifies the temperature of the air being added to a particular conditioning zone (2, for example) by comparing the desired temperature at the zone selector (45) with the actual measured ambient temperature from the zone sensor (18).

In contrast, the currently claimed device requires a control unit that establishes an injection temperature target value for at least one cabin zone without using the ambient temperature value in that cabin zone. The control unit of claim 11 is further described as establishing an injection temperature target value for one cabin zone based on the values of

the injection temperature target and actual injection temperature in another cabin zone. The controller (41) of Fischer '983 must receive the ambient temperature readings to function properly, and Fischer '983 contains no disclosure to suggest any alternative methods of controlling the air conditioning system. The Fischer '983 controller (41) operates in precisely the opposite manner from the control unit of claims 11 and 13. Fischer '983 thus clearly fails to anticipate all of the cited features of the claimed control unit. Applicants respectfully request that the rejection of claims 11 and 13 now be withdrawn.

III. Claims 1-6 and 14 are Non-Obvious

A. The Claims

Independent claim 1 recites a "method for the control of the temperature of feed air which is injected into a cabin of a passenger aircraft, whereby the cabin of the aircraft is sub-divided into a plurality of cabin zones which are respectively supplied with specially temperature-controlled feed air, whereby with this method, the temperature of the feed air injected into each cabin zone is controlled dependent upon a deviation of an injection temperature actual value, measured by a sensor, of the feed air injected into the respective cabin zone from an injection temperature target value." For a selected portion of the cabin zones, "the injection temperature target value is established by comparing an ambient temperature actual value, measured by a sensor, for the respective cabin zone with an ambient temperature target value." For a first cabin zone not within the selected portion, "the injection temperature target value of the first cabin zone is established on the basis of an injection temperature target value of at least one second cabin zone different from the first cabin zone and an injection air actual temperature (T_L) of the at least one second cabin zone, whereby every second cabin zone is within the selected portion."

Claims 2-5 depend from claim 1 and recite additional details or features of the claimed method for controlling the temperature. For example, claim 3 requires that the injection temperature target value for the first cabin zone be established upon the average value of the injection temperature target values and injection temperature actual values of all the second cabin zones.

Independent claim 14 recites a method for controlling the temperature of feed air injected into a cabin zone of a passenger aircraft, including "sensing an injection temperature actual value of the feed air to be injected into the cabin zone; and controlling the feed air temperature dependent upon a deviation of the sensed injected temperature actual value from an injection temperature target value." This injection temperature target value is "established without using an ambient temperature actual value for the cabin zone."

B. The Deficiencies of the Cited Prior Art

As described above, Fischer '983 is directed to an air conditioning system for a plurality of air conditioning zones (2-4) in a cabin (1B) of an aircraft. Although a plurality of air distribution systems (5-10) is independently controlled based on the cabin configuration of air conditioning zones (2-4), the controller (41) relies on ambient temperature measurements from zone sensors (18-20) and desired ambient temperature inputs from zone selectors (45-47) to determine the proper injection feed air temperature through each associated air distribution system (5-10).

The Office Action acknowledges that Fischer '983 fails to disclose that an injection temperature target value for a first cabin zone is determined upon the basis of the injection temperature target value and the injection temperature actual value of at least a second cabin zone. The Office Action also acknowledges that Fischer '983 fails to include any disclosure about using averaged temperatures based on multiple sensors. However, the Office Action cites Nakanishi '939 for a multi-sensor temperature control system that can

determine if a sensor is malfunctioning so that it can be removed from use, and further cites Taylor '172 for the use of average temperature data from multiple sensors. The Office Action states that it would have been obvious to "use the sensor failure accommodation of ceasing to use a broken sensor as is done by Nakanishi in combination with the average temperature control of Taylor et al used in place of the additional sensor of Nakanishi in the system of Fischer" to control the temperature in cabin zones in the event of a sensor failure.

Applicants respectfully disagree. Nakanishi '939 is directed to a distributed air conditioning system for use in multiple hotel rooms, for example. As shown in Fig. 1, each room (85) of the Nakanishi '939 system includes at least three temperature detectors (D1, D2, D3) mounted respectively on an operation unit (30), an indoor conditioning unit (20), and a monitoring meter (86). Each of the temperature detectors (D1, D2, D3) measures the ambient temperature in the room (85) and sends this information to the control section (70). When one of the temperature detectors (D1, D2, D3) fails, the Nakanishi '939 control section (70) can determine which detector (D2, for example) has failed by comparing the temperature readings of all three detectors (D1, D2, D3) and then removes that detector (D2) from the control process until repair is completed. Just as in Fischer '983, the Nakanishi '939 control section (70) is completely dependent on only ambient room temperature measurements. Even if the failure prevention system of Nakanishi '939 were added to the Fischer '983 system, that combination would fail to meet the requirements of independent claims 1 and 14. More specifically, the currently claimed invention requires that for at least one cabin zone, the injection temperature target value is determined without using ambient temperature measurements from the associated cabin zone.

The Office Action states that Taylor '172 would have been obvious to combine with the Fischer/Nakanishi combination, but Applicants respectfully assert this is not true. Taylor '172 is directed to a temperature control mechanism which averages the readings of

several thermostats to control a steam heater for an entire building. As shown in Figs. 1 and 4, the plurality of thermostats (L, L', L") is connected in series and mounted at various locations within the building to be heated. To avoid improper heating caused by a temporary sudden drop in temperature at one of the thermostats (L) due to a door or window opening, the measurements of each of the thermostats (L, L', L") are averaged and the control mechanism opens or closes the steam heat valve for the entire building accordingly. The Taylor '172 mechanism provides no independent control of temperature for the various rooms in the building. Fischer '983 explicitly states that "because the seating density and therewith the thermal load differs among the various passenger classes within an aircraft cabin, a separate temperature regulation system is required in each passenger class" (Col. 1, ll. 36-39).

Consequently, Fischer '983 teaches away from the control system of Taylor '172, which provides no such separate temperature regulation for the rooms of the building. A person having skill in the art would not have combined Taylor '172 with Fischer '983 and Nakanishi '939, and the Fischer/Nakanishi combination alone is deficient with respect to the elements of claims 1 and 14, as explained above. Thus, claims 1 and 14 are patentable over this combination of references.

Even assuming for the sake of argument that Taylor '172 could be properly combined with Fischer '983 and Nakanishi '939, the Taylor '172 system is also controlled dependent upon ambient temperature readings in the rooms to be heated, which is the opposite of the currently claimed invention. Following the argument of the Office Action (at page 7, ll. 7-14), the Fischer/Nakanishi/Taylor combination would have no additional backup sensors beyond the zone sensors (18, 19, 20). When a zone sensor (18) in a first cabin zone (2) would fail, the alleged new control system would ignore the input of zone sensor (18) and instead rely upon the average of the other zone sensors (19, 20) to control the injected temperature target value for the first cabin zone (2). Note that because each of the cited

references only controls injected temperatures based on ambient temperatures, these other two zone sensors (19, 20) are what one skilled in the art would have to use in the cited combination's control system. As explained in the current application, the various cabin zones (2, 3, 4) need independent temperature controls because the density of persons in each zone could be different. Thus, the temperature in the other zones (3, 4) in our example could require much more cooling because of more people in those zones (3, 4) compared to the first cabin zone (2). Averaging the ambient temperatures in those hotter zones (3, 4) would lead to excessive cooling being done in the first cabin zone (2) in the proposed combination of references, which undermines the entire benefit of the currently claimed invention. Thus, even the cited combination of Fischer '983, Nakanishi '939, and Taylor '172 fails to teach the methods of claim 1 and 14.

For at least these reasons, independent claims 1 and 14 are not obvious in view of the cited combination of art. Each of claims 2-6 depends from independent claim 1, and recites one or more additional features in combination with the features of claim 1. For substantially the same reasons set forth above with respect to claim 1, and further because the relied upon prior art does not support an obviousness rejection as to any of these combinations of elements, each of claims 2-6 is also patentable. Applicants respectfully request that the rejection of claims 1-6 and 14 now be withdrawn.

IV. Conclusion

Based on the amendments to the claims and these Remarks, Applicants respectfully submit that all presently-pending claims are patentable and should be allowed without delay

Applicants do not believe that any fee is due in connection with this submission other than the fee accompanying the Request for a One-Month Extension of

Time. However, if any additional fees are necessary to complete this communication, the Commissioner may consider this to be a request for such and charge any necessary fees to Deposit Account No. 23-3000

Respectfully submitted,

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